

**Notice of Allowability**

Application No.

10/505,167

Examiner

P. Agustin

Applicant(s)

TAKESHITA ET AL.

Art Unit

2627

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_.
2. ☒ The allowed claim(s) is/are 1,3,4 and 6-17, now renumbered 1-15, respectively.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                       | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                               | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date ____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date ____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material        | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|   | 9. <input type="checkbox"/> Other ____.   |

**DETAILED ACTION**

1. This application is a 371 of PCT/JP03/02567, filed March 5, 2003.
2. Claims 1, 3, 4 & 6-17 are currently pending.

***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Page 24, line 16: "first electrode portion 1008A" has been changed to --first electrode portion 1006A--;

Page 24, line 17: "first transparent electrode 1008" has been changed to --first transparent electrode 1006--;

Page 24, lines 19-20: "second transparent electrode 1006" has been changed to --second transparent electrode 1008--.

***Priority***

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Citation of Relevant Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ootaki et al. (US 5,901,131) disclose a driver for driving a liquid crystal panel in different ways depending on a type of a recording medium to be reproduced, wherein sections of an electrode include a central section and pairs of sections positioned on both sides of the central section and a peripheral section, and form a plurality of general circular aperture patterns linearly shifted from each other in an overlapped manner.

Araki et al. (US 5,914,923) disclose that if a tilt error voltage is applied to each of the liquid crystal panel driving circuits of a liquid crystal panel, the electrode elements can be controlled separately, and the refractive index of each electrode element can be adjusted, thereby compensating wave aberration.

Ogasawara (US 6,125,088) discloses driving a liquid crystal element to adjust a refractive index of the liquid crystal and providing the laser beam passing through the liquid crystal element with a phase difference, thereby correcting wavefront aberration in the radial direction.

Furukawa et al. (US 6,411,576) disclose a liquid crystal panel driven by first to third drive signals Sdv1 to Sdv3 supplied to pattern electrodes to control the refractive index of the liquid crystal panel; thus, a desired phase difference is introduced to the light beam passing through the liquid crystal panel, and thereby compensating wavefront aberration in the radial direction.

Hirai (US 7,142,497) discloses a liquid crystal device, wherein at least one side of a transparent electrode is divided into concentric circles, and this liquid crystal device is configured so that a voltage can be applied independently between the electrode portion of each concentric circular ring and a common electrode; thereby, each circular part of the liquid crystal

device can be freely controlled to have a refractive index  $n$  through a range between  $n_1$  and  $n_2$  by controlling the above-mentioned voltage.

***Allowable Subject Matter***

6. Claims 1, 3, 4 & 6-17 are allowed over the prior art of record.
7. The following is an examiner's statement of reasons for allowance:

The prior art of record alone or in combination fails to teach or suggest:

in claim 1, "*adjusting  $V_1$  and  $V_2$  so that a refractive index  $\Delta N$  of the liquid crystal changes in a substantially linear range relative to  $\phi$ ; and controlling the refractive index  $\Delta N$  of the liquid crystal by adjusting the phase difference  $\phi$  in a state where  $V_1 = V_2$ ,  $F_1 = F_2$ , and  $D_1 = D_2$  so as to vary an effective voltage to be applied to the liquid crystal*";

in claim 7, "*the first and second transparent electrodes are disposed so that there is a spacing between a first axis and a second axis, the first axis extending through the center of the first electrode portion and being orthogonal to the first transparent electrode, the second axis extending through the center of the fourth electrode portion and being orthogonal to the second transparent electrode*"; and

in claim 12, "*controlling a refractive index of the liquid crystal disposed between the first transparent electrode and the second transparent electrode by fixing the phase difference  $\phi_1$  and adjusting the phase difference  $\phi_2$  and the phase difference  $\phi_3$  by an identical phase amount in a state where the first to fourth driving signals have the same voltage amplitude, frequency, and duty ratio, so as to vary an effective voltage to be applied to the liquid crystal*".

Claims 4 & 15 have similar allowable features as claims 1 & 12, respectively.

Claims 3, 6, 8-11, 13, 14, 16 & 17 are dependent upon allowed base claims.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to P. Agustin whose telephone number is 571-272-7567. The examiner can normally be reached on Monday-Thursday 8:30-6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. Agustin/  
Art Unit 2627

/William Korzuch/  
SPE, Art Unit 2627